

## Improvements In and Relating to Credential Transfer Methods

The present invention relates to credential transfer  
5 methods, to methods of communication and to corresponding  
systems. The present invention further relates to digital  
credential indices.

In a distributed electronic network, such as the internet,  
10 when a user approaches a service provider for a service  
(which may, by way of example, be a financial transaction)  
the service provider may require in order to provide this  
service one or more credentials from the user. Generally  
a credential is a data structure provided to the user  
15 (sometimes referred to as the "bearer") for a purpose,  
with some acknowledged way to verify the user's right to  
use the credential. A credential normally will relate to  
an attribute such as the identity of the bearer. For  
instance, if the user is a customer seeking to purchase  
20 goods from a service provider, the service provider may  
require from the customer credit card details (credit card  
type, credit card number, name on credit card and expiry  
date), an address and perhaps other personal details such  
as, say, a passport number or phone number. In order to  
25 make a purchase from the service provider, the user must  
provide the service provider with the details requested.

Such a method and system has several disadvantages.  
First, it takes control away from the user/customer (the  
30 term "user" from now is intended to include reference to  
"customer"). That is, the user does not have control over  
the credentials to be provided.

Secondly, such a system and method is binary in the sense that the service provider provides authorisation (ie accepts the credentials) and allows the transaction to proceed or does not. There is no middle ground.

Preferred embodiments of the present invention aim to obviate or overcome disadvantages of the prior art such as those described above.

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According to the present invention in a first aspect, there is provided a credential transfer method for use on a distributed electronic network, the method comprising the steps of a sender communicating to a recipient a credential index comprising an index referring to at least one credential, the recipient selecting at least one of the credentials from the index of at least one credential provided by the sender, the recipient communicating to the sender an indication of the selected at least one credential and the sender providing to the recipient at least one credential corresponding to the selected at least one credential.

According to the present invention in a second aspect, there is provided a method of communication for use on a distributed electronic network, which method comprises a credential transfer method according to the first aspect of the invention.

According to the present invention in a third aspect, there is provided a system configured and adapted to

According to the present invention in a fourth aspect, there is provided a digital credential index comprising an index to at least one credential.

15           Suitably, the method comprises the additional step of determining whether the at least one credential is sufficient and communicating the result of the determination to the sender.

25           Suitably, the sender communicates a plurality of  
credential indices to the recipient.

Suitably, the method comprises the additional step of  
30 determining a service level according to each of the  
plurality of credential indices communicated to the  
recipient by the sender and communicating the service

level corresponding to at least one of the credential indices to the sender. Suitably, a service level is communicated to the sender for each credential index communicated to the recipient by the sender.

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Suitably, the credential comprises a digital credential.

Suitably, the credential index comprises indices to a plurality of credentials.

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Suitably, the method comprises the additional step of the sender selecting a credential index from a plurality of available credential indices.

15 The present invention will now be described, by way of example only, with reference to the drawings that follow; in which:

20 Figure 1 is a schematic illustration of a distributed electronic network illustrating features of embodiments of the present invention.

Figure 2 is a functional flow diagram illustration of an embodiment of the present invention.

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Figure 3 is a schematic workflow diagram corresponding to the embodiment shown in Figure 2.

30 Figure 4 is a functional flow diagram illustration of another embodiment of the present invention.

Referring to Figure 1, there is shown a distributed electronic network 2 comprising a user's terminal 4 (also used to designate the user generally) in electronic communication with a service provider 6 (the recipient) via the internet, indicated schematically at 8. In this embodiment the user 4 is the sender. It will be appreciated that embodiments of the present invention can be operated across other distributed electronic networks such as wide area networks or local area networks.

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The user 4 is the bearer of a plurality of digital credentials obtained previously.

Referring to Figures 2 and 3 of the drawings that follow, a first embodiment of the present invention will now be described.

Figure 2 is a step-by-step flow diagram of the first embodiment, while Figure 3 is a corresponding overview of the workflow.

In step 200 (Figure 2) the user 4 creates a plurality of different credential indices 300A-N. Embodiments of the present invention can operate with a single credential index 300, but in preferred embodiments the user generates a plurality of credential indices 300 ready for submission to service providers as desired. Each credential index 300 contains details of the credentials 302A-M the user 4 is willing to offer to the service provider 6. The credentials 302A-M are those the user 4 has available for selection to provide to a service provider. The number of credentials 302 need not (and generally will not)

correspond to the number of credential indices 300. (For the sake of clarity, not all credential indices nor credentials are referenced in Figure 3). So, for instance, the user 4 may include in a first credential index 300A reference to an address and a credit card details. In a second credential index 300B the user 4 may, for instance, include reference to a passport number and a telephone number. In a third credential index 300C the user 4 may, for instance, include reference to their employer's name and address and their bank details. The selection of to which credentials 302 are referenced in which credential index 300 is left to the user 4.

Credential indices 300 may contain simple reference to a credential 302 or be descriptive of the credential 302. For instance, the file of the credential may simply state that the credentials 302 are the user's name and address without giving any details of them. Alternatively or in addition the credential indices 300 may contain thumbnails of the relevant credentials. A thumbnail of a credential is a portion of it, a summary or a constrained description thereof. The key feature is that the credential itself is not disclosed. For instance a credential index 300 may include the first 12 digits of a credit card number or the first line of an address. A credential index may, alternatively, contain reference to, say, a credit card number (without disclosing the number itself) and a credit limit.

In an extreme example a credential index 300 may refer to a single credential 302. For the purpose of the

embodiments described it is assumed that each credential index 300 references a plurality of credentials 302.

In step 202, the user 4 generates a package of credentials 302 corresponding to those indicated to be available in step 200. The credentials 302 may be generated separately or be combined in single credential document. This step can take place earlier or later in the procedure up to when the user 4 provides the credentials 302.

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In step 204, the user 4, having decided to approach a service provider 6 for a service decides which credentials 302 he/she is willing to offer to the service provider 6 and provides a corresponding credential index to the service provider 6. For the present embodiment, the user 4 offers credentials 302A and 302B referred to in a credential index 300A. The credentials 302 the user 4 is willing to offer to the service provider 6 may vary, for instance, because of the user's confidence in the security of the site and/or the user's knowledge of the service provider involved in the transaction.

In step 206 the service provider 6, upon receipt of the credential index 300A from the user 4 reviews the credentials 302A and 302B offered decides (the decision making process may be automated) whether the type of credentials offered are sufficient to enable the service provider 6 to provide the service requested. If the service provider 6 is willing to accept the credentials 302A and 302B for the service it responds, in step 208 that the credentials 302A and 302B offered in the credential index 300A are acceptable and, in step 210, the

user 4 transmits the credentials 302A and 302B corresponding to those referred to in the credential index 300A to the service provider 6. The service provider 6 then, in step 212 provides the corresponding service.

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If, at step 206, the service provider 6 decides that the credentials 302A and 302B offered in the credential index 300A are not sufficient for the service provider 6 to provide the service it informs the user 4 to that effect.

10 The user 4 then has the choice of either providing a new index of credentials (see step 204) or terminating the transaction.

Alternatively, the service provider 6 may just select one  
15 of the credentials 302A or 302B and indicate that this is sufficient for a transaction. The user 4 then transmits the relevant credential to the service provider 6.

Referring to Figure 4 of the drawings that follow, a  
20 further embodiment of the present invention is illustrated. In Figure 4 the steps 400 to 404 correspond to those of steps 200 to 204 in relation to Figure 2 and so will not be explained in detail here.

25 In step 406 the recipient 6 determines what service level is appropriate to the credentials 302 offered in the credential index 300 supplied by the user 4. So, for instance, in the case of the user 4 requesting a service for financial consideration if the user 4 communicates to  
30 the recipient 6 a credential index 300 referring to credit card details and an address, the service provider 6 determines how much credit it will extend to the user 4

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saying it will offer services to a value up to £1,000 and communicates this to the user 4 in step 408. Steps 410 and 412 correspond to steps 210 and 212 in Figure 2.

- 5 The determination by the service provider in step 406 may be to offer no service at all or some other service level, such as only offering certain types of service (say if products can only be supplied to those of a minimum age).
- 10 If the user 4 is not satisfied with the service level proposed by the service provider 6 at step 408, the user 4 can re-institute the procedure to seek another service level offer from the service provider 6.
- 15 In a modification of the embodiment of Figure 4, in steps 404 the user 4 can provide to service provider 6 a plurality of credential indices 300 from which (as described in relation to Figure 4) the service provider 6 determines for each credential index a corresponding
- 20 service level the service provider is willing to offer. The service provider 6 therefore communicates to the user 4 a plurality of service level indicators linked (or otherwise cross-referenced) to the corresponding credential indices, respectively. The user 4 then
- 25 determines which service level it wishes to select based on the user's assessment of the credentials required by the service provider 6 for the corresponding service. The user 4 then communicates the credential 302 to the service provider 6 (step 410).

Preferred embodiments of the present invention put into the control of the user the decision of which credential to provide to a service provider.

5 Further, an exchange of information takes place between user and service provider enabling the user to find a suitable service level according to the credentials the user is willing to provide to the service provider.

10 It is noted that although reference is made to a "service provider" in the preferred embodiments, the recipient of communication need not be the actual provider of the service.

15 Communications for the present invention may be encrypted.

The reader's attention is directed to all papers and documents which are filed concurrently with or previous to this specification in connection with this application and  
20 which are open to public inspection with this specification, and the contents of all such papers and documents are incorporated herein by reference.

All of the features disclosed in this specification  
25 (including any accompanying claims, abstract and drawings), and/or all of the steps of any method or process so disclosed, may be combined in any combination, except combinations where at least some of such features and/or steps are mutually exclusive.

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Each feature disclosed in this specification (including any accompanying claims, abstract and drawings), may be

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replaced by alternative features serving the same, equivalent or similar purpose, unless expressly stated otherwise. Thus, unless expressly stated otherwise, each feature disclosed is one example only of a generic series  
5 of equivalent or similar features.

The invention is not restricted to the details of the foregoing embodiment(s). The invention extend to any novel one, or any novel combination, of the features disclosed  
10 in this specification (including any accompanying claims, abstract and drawings), or to any novel one, or any novel combination, of the steps of any method or process so disclosed.

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